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Notice of Allowability	Application No.	Applicant(s)	
	10/786,818	SOSNOWSKI ET AL.	
	Examiner	Art Unit	
	Anjan K. Deb	2858	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to application filed 02/24/2004.
2. ☒ The allowed claim(s) is/are 1-4.
3. ☒ The drawings filed on 03 May 2004 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|--|
| 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____. |
| 3. <input checked="" type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date <u>02/24/2004</u> | 7. <input type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____. |

DETAILED ACTION

1. This office action is in response to application filed 02/24/2004.

Allowable Subject Matter

2. Claims 1-4 are allowed.

Reasons for Allowance

3. The following is an examiner's statement of reasons for allowance:

The primary reason for allowance of the claims is the inclusion of: (f) measuring the fluid temperature (T_i) and determining FZT_{iMIN} by interpolation from the database; and (g) exciting one electrode with an alternating current voltage at a frequency less than FZT_{iMIN} and measuring the current in a second electrode and computing the electrode interfacial impedance Z_s and computing the impedance difference ($\Delta Z = Z_s - Z_{NM}$).

Pertinent Art

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Schilowitz et al. disclose method of monitoring fluid condition in situ [para 0020,0022]] comprising (a) measuring and recording the temperature of the fluid (Fig. 3); (b) disposing

Art Unit: 2858

electrodes in the fluid and exciting one electrode with an alternating current voltage and sweeping the frequency thereof over a certain range [para 0020, 0023]; (c) measuring the current (charge)[0023] in a second electrode and computing the reactance (Z'') and resistance (Z') at a plurality of predetermined intervals of frequency in the range [para 0025]; (d) determining the frequency in said range associated with the minimum value of reactance (Fig. 3); and (e) repeating steps a - d for a predetermined number of temperature intervals (70,90,120) over a selected range of temperatures (70-120) and compiling a database of values (FZTiMIN) for each temperature interval in the range (Fig. 3); and (h) determining the fluid condition by interpolation from a database of values (Nyquist plot) of known fluid condition.

Schilowitz et al. does not disclose (f) measuring the fluid temperature (T_i) and determining FZTiMIN by interpolation from the database; and (g) exciting one electrode with an alternating current voltage at a frequency less than FZTiMIN and measuring the current in a second electrode and computing the electrode interfacial impedance Z_s and computing the impedance difference ($\Delta Z = Z_s - Z_{NM}$).

Lvovich et al. (US 6,861,851 B2) disclose method for on-line monitoring of quality and condition of fluid comprising repeatedly applying alternating current voltage at a plurality of frequencies and measuring changes in the electrical response signals due to changes in the real and reactive impedance of the fluid to determine fluid condition. Lvovich et al. does not disclose measuring the fluid temperature (T_i) and determining FZTiMIN by interpolation from the database and computing the impedance difference ($\Delta Z = Z_s - Z_{NM}$), exciting one electrode with

Art Unit: 2858

an alternating current voltage at a frequency less than $FZTiMIN$, and computing the impedance difference ($\Delta Z = Z_s - Z_{NM}$).

Hu (US 2004/0239344 A1) discloses method of monitoring fluid condition in situ (on-line) [para 0008] comprising disposing electrodes 11 in fluid and exciting one electrode with an alternating current voltage and measuring real and reactive impedance of the fluid by sweeping the frequency thereof over a certain range of frequencies in the range (0.1 Hz to 1 Mhz) and analyzing the impedance spectrum using pattern recognition algorithm which compares impedance spectra stored in memory to determine fluid condition. Hu does not disclose measuring the fluid temperature (T_i) and determining $FZTiMIN$ by interpolation from the database and computing the impedance difference ($\Delta Z = Z_s - Z_{NM}$), exciting one electrode with an alternating current voltage at a frequency less than $FZTiMIN$, and computing the impedance difference ($\Delta Z = Z_s - Z_{NM}$).

Lin (US 2005/0017738 A1) discloses method of monitoring fluid condition (Diesel engine lubrication oil) by applying alternating current voltage in a range of frequencies, measuring current at each frequency in the range of frequencies, and determining the frequency at which the value of current is maximum (Fig. 4), and measuring oil temperature so as to compensate for temperature variations in the measurement current. Lin does not disclose measuring the fluid temperature (T_i) and determining $FZTiMIN$ by interpolation from the database and computing the impedance difference ($\Delta Z = Z_s - Z_{NM}$), exciting one electrode with

Art Unit: 2858

an alternating current voltage at a frequency less than $FZTiMIN$, and computing the impedance difference ($\Delta Z = Z_s - Z_{NM}$).

Schachameyer et al. (US 6,844,745 B1) discloses method of determining fluid condition of diesel engine lubricant in-situ (during real time operation) comprising applying alternating current voltage to electrodes 20,22 in a range of frequencies (Hi,Lo), measuring the current in electrode, and computing electrode interfacial impedance Z_s , and computing the impedance difference ($\Delta Z = Z_s - \text{Bulk Fluid Impedance}$) for correlating with fluid condition X.

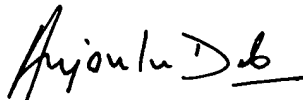
Schachameyer et al. does not disclose (f) measuring the fluid temperature (T_i) and determining $FZTiMIN$ by interpolation from the database; and (g) exciting one electrode with an alternating current voltage at a frequency less than $FZTiMIN$ and measuring the current in a second electrode and computing the electrode interfacial impedance Z_s and computing the impedance difference ($\Delta Z = Z_s - Z_{NM}$).

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Art Unit: 2858

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Anjan K. Deb whose telephone number is 571-272-2228. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lefkowitz Edwards can be reached at 571-272-2180.



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Patent Examiner

Art Unit: 2858

5/5/05

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